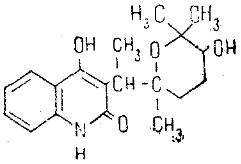
The base does not contain methoxyl, methylenedioxy, or N-methyl groups, is not hydrogenated over a platinum catalyst, and gives acetone on being oxidized by the Kuhn-Roth method. The IR spectrum of bucharidine has absorption bands at 3470 cm^{-1} (OH) and 1645 cm^{-1} (NCHO).

The IR spectrum of the base (λ_{max} 228, 274, 282, 314, 328 mμ; log ε 4.43, 3.79, 3.76, 3.77, and 3.66, respectively) almost coincides with that of 2,4-dihydroxyquinoline. The NMR spectrum confirms that the skeleton of bucharidine is a 2,4-dihydroxyquinoline structure. In the region of aromatic protons the spectrum contains a one-proton quartet at τ 2.12 and a three-proton multiplet at τ 2.78. The descreening of the $H_{(5)}$ proton relative to the multiplet of the other aromatic protons by 66 Hz [1], and also the solubility of the alkaloid in alkali, shows that the base has a 4-hydroxyquinol-2-one skeleton. The absence of a signal from the proton on the carbon atom in position 3 which, as is well known appears in the form of a singlet [2], shows that the residue of the molecule, $C_{10}H_{19}O_2$, is attached to the $C_{(3)}$ atom of the 4-hydroxyquinol-2-one nucleus.

The other signals in the NMR spectrum of bucharidine may be ascribed to the protons of the following groups: a two-proton unresolved multiplet with a center at τ 6.10 ($-CH-CH_3$ and $-CH-OH$), a four-proton multiplet at τ 8.08 ($-O-C-CH_2-CH_2-C-O-$), a six-proton singlet at τ 8.84, and three-proton doublet at τ 8.77, and a three-proton singlet at τ 8.70 (four methyl groups).

Under electron bombardment, the molecule of the bucharidine decomposes forming ions with m/e 272, 242, 214, 183, and 143, the last two ions being the most intense in the spectrum.

Taking into account what has been said above and also the fact that the NMR spectrum of bucharidine lacks the signals of olefinic protons, the following formula may be proposed for the base:



Bucharidine represents a new type of 4-hydroxyquinol-2-one alkaloids with a substituent in position 3 having a modified chain consisting of two isoprene units.

REFERENCES

1. A. V. Robertson, Austr. J. Chem., 16, 451, 1963.
2. R. Tschesche and W. Werner, Tetrah., 23, 1873, 1967.

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DESOXYPEGANINE—A NEW ALKALOID FROM PEGANUM HARMALA

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We have studied the alkaloids of the plant Peganum harmala L., collected in the Sir'dar'ya region in June 1965 in the flowering and incipient fruit-bearing stage. Extraction with chloroform gave the total bases (1.3% on the weight of the raw material). By separation of the bases and their salts with respect to solubilities the following known alkaloids were obtained: l-peganine, dl-peganine, vasicine, desoxyvasicine, and harmine [1], and a base with mp 86–87° C, which gave well-crystalline salts: picrate, 203–204° C, hydrochloride 250° C, perchlorate 244–245° C, and nitrate 137–138° C (decomp.); mol. wt. 172 (mass spectrometry). The properties of the base are similar to those of the desoxypeganine obtained previously by the reduction of the chlorodesoxypeganine [2]. Subsequently, desoxypeganine was synthesized [3]. We obtained desoxypeganine from peganine by the method of Adams et al. [2]. The bases isolated from the plant and obtained from peganine were identical (chromatography in a thin layer of alumina, mixed melting point, IR spectra).

Consequently, the base that we have isolated is desoxypeganine, obtained from a plant for the first time.

REFERENCES

1. I. N. Koretskaya, ZhOKh, 27, 336, 1957; N. I. Koretskaya, and M. M. Utkin, ZhOKh, 28, 1087, 1958.
2. W. E. Hanford, P. Liang, R. Adams, J. Am. Chem. Soc., 56, 2780, 1934.
3. E. Spath, F. Kuffner, N. Platzer, Ber., 68, 497, 1935; W. E. Hanford, R. Adams, J. Am. Chem. Soc., 57, 921, 1935.

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THE ALKALOIDS OF MERENDERA JOLANTAE

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The genus Merendera Ram. is one of the largest alkaloid-bearing genera in the family Liliaceae. Four species of this genus grow in Central Asia. Only one of these species, M. robusta Bge., has been well studied for its alkaloid content [2]. We have investigated Merendera jolantae E. Czemiak, which is widely distributed in the mountain regions of southwestern Turkmenia. Only the presence of colchicine in it is mentioned in the literature [3].

The leaves and stems of the plant (48 kg), collected in the fruit-bearing period (March, 1965) on the territory of the Makhtymkula kolkhoz, Kara-Kala region, were extracted with methanol. The solvent was distilled off and the residue was diluted with water. The aqueous solution, filtered from resin, was acidified with hydrochloric acid and was extracted with ether to remove extractable contaminants. The hydrochloric acid solution was extracted with chloroform into which the neutral alkaloids (I) passed. After being made alkaline with ammonia, the aqueous solution was again extracted with chloroform to remove the basic alkaloids (II). Then I and II were each separated into phenolic and nonphenolic fractions. This gave 0.07% of neutral substances, 0.04% of phenolic neutral substances, 0.19% of basic substances, and 0.09% of phenolic-basic substances. Thus, the combined alkaloids amounted to 0.39% of the weight of the air-dry plant.

Chromatography on a column of alumina (activity grade II) yielded colchamine, colchicine, and colchamein. In addition, the presence of 3-desmethylcolchamine and colchiceine was shown by paper chromatography. The main alkaloid of the plant is colchamine.

All the fractions contained, in addition to known alkaloids, alkaloids not previously reported in the literature. They were detected by paper chromatography [4] and chromatography in a thin layer of alumina. It was found that the majority of them have a tropolone ring in their structure. One of the new compounds, which we designate MI-1, was obtained in the crystalline state from the basic fraction of alkaloids: mp 215–216° C (from acetone), $[\alpha]_D^{20}$ +112° (c 0.95; chloroform), composition $C_{19}H_{23}O_3N$ [hydrochloride with mp 274–275° C (from acetone) and methiodide with mp 257–258° C (from acetone)].

REFERENCES

1. Flora of the USSR, Vol. IV [in Russian], Moscow and Leningrad, 1935.
2. A. S. Sadykov and M. K. Yusupov, Tr. TashGU im. V. I. Lenina, Estestv. nauki, no. 203, 15, 1962.
3. V. V. Sokolov, Alkaloid-Bearing Plants of the USSR [in Russian], Moscow, p. 168, 1952.
4. A. S. Sadykov and M. K. Yusupov, ZhPKh, 38, 222, 1965.

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